**Assignment 3 – Answer Key**

**Microeconomics EC1110**

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**Sayre – 7th Edition**

**Chapter 6 – p204 #36**

a) See Table 6.7

Table 6.7 (completed)

|  |  |  |  |
| --- | --- | --- | --- |
| Number of Workers in Crew | TPL  (feet per day) | MP  (feet per day) | AP  (feet per day) |
| 1 | 20 | 20 | 20 |
| 2 | 80 | 60 | 40 |
| 3 | 150 | 70 | 50 |
| 4 | 200 | 50 | 50 |
| 5 | 230 | 30 | 46 |
| 6 | 246 | 16 | 41 |

b) See Figure 6.8

Figure 6.8 (completed)

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c) See Table 6.8

Table 6.8 (completed)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Number of Workers in Crew** | **TP**  **(feet per day)** | **TVC** | **AVC** | MC |
| 1 | 20 | **$240** | **$12.00** | **$12.00** |
| 2 | 80 | **480** | **6.00** | **4.00** |
| 3 | 150 | **720** | **4.80** | **3.43** |
| 4 | 200 | **960** | **4.80** | **4.80** |
| 5 | 230 | **1200** | **5.22** | **8.00** |
| 6 | 246 | **1440** | **5.85** | **15.00** |

d) See Figure 6.9

**Figure 6.9 (completed)**

21

**50 100 150 200 250 300**

**Quantity of output**

e) **4** workers.

f) **200**.

g) **Minimum average variable cost** is achieved when output is **200**.

h) **3** workers.

i) **150**.

j) **Minimum marginal cost** occurs when output is **150**.

k) The conclusion is that **maximum average product** occurs using the same number of workers that are used to produce an output that **minimizes average variable costs**. Similarly, **maximum marginal product** occurs using the same number of workers that are used to produce an output that **minimizes marginal costs.**

**Chapter 6 – #37**

|  |
| --- |
| **Units of Labour TP AP MP** |
| 0 0 / / |
| 1 12 **12 12** |
| 2 30 **15 18** |
| 3 54 **18 24** |
| 4 68 **17 14** |
| 5 80 **16 12** |
| 6 84 **14 4** |
| 7 77 **11 – 7** |

**Chapter 6 – #38** See the following table:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Output** | **TFC** | **TVC** | **TC** | **AFC** | **AVC** | **ATC** | **MC** |
| 1 | $1200 | $400 | **$1600** | **$1200** | **$400** | **$1600** | **$400** |
| 2 | 1200 | 600 | **1800** | **600** | **300** | **900** | **200** |
| 3 | 1200 | 720 | **1920** | **400** | **240** | **640** | **120** |
| 4 | 1200 | 800 | **2000** | **300** | **200** | **500** | **80** |
| 5 | 1200 | 1500 | **2700** | **240** | **300** | **540** | **700** |
| 6 | 1200 | 3000 | **4200** | **200** | **500** | **700** | **1500** |
| 7 | 1200 | 5250 | **6450** | **171.43** | **750** | **921.43** | **2250** |
| 8 | 1200 | 8000 | **9200** | **150** | **1000** | **1150** | **2750** |

**Chapter 7 – p#226 36**

a) See Figure 7.8

**Figure 7. 8 (completed)**

b) It is easiest to answer this question by referring to the data in Table 7.3, although the answers could also be read off the graph.

**Output:** 30 40 50 60 70 80 90 100 110 120

**Plant 1 2 2 3 3 4 4 4 5 5**

c) See Figure 7.8

d) **Plant 3 (**Minimum efficient scale is the smallest level of output at which a firm is able to minimize long-run average cost.)

e) Minimum long-run average cost is achieved at an output of **60**.

f) **Yes**  (excess capacity exists because an output of 80 is below the output---90--- at which minimum average cost of $4 is achieved)

g) Output of **110**  (economic capacity is where short-run average costs are minimized)

h) Between the outputs of **0 and 60**, where long-run average costs are declining.

i) Between the outputs of  **61 and 90**, where long-run average costs are constant.

j) **Above the output of 90**, where long-run average costs are increasing.

k) The market is too small for plant sizes **3, 4 and 5** since all have economic capacity at outputs above 50.